PUGET SOUND AIR POLLUTION CONTROL AGENCY
KING COUNTY ▲ KITSAP COUNTY ▲ PIERCE COUNTY ▲ SNOHOMISH COUNTY

August 29, 1995

RECEIVED
AUG 30 1995
AGCW–SEATTLE

Ed Pierce, Plant Manager
Manager, Safety and Environmental
Ash Grove Cement Company
3801 E Marginal Wy S
Seattle, WA. 98134

Dear Mr. Pierce:

Notice of Construction (Order of Approval) No. 5730
Ash Grove Cement Planetary Cooler
<u>Order to Complete BACT Analysis</u>

Thank you for the Planetary Cooler BACT Analysis you submitted on April 27, 1995, as required by Condition No. 9 of Order of Approval No. 5730.

We have reviewed the analysis and find it unacceptable because Ash Grove did not fully analyze any options to solve the fugitive dust problem. We expected to see a list of possible corrective actions including increasing the hooding and increasing the hooding efficiency. We also expected to see a ***"top-down"*** BACT analysis of the options.

Please provide additional information to address these issues by October 31, 1995.

Please follow the enclosed outline for your BACT Analysis. If you have any questions, contact Fred Austin at 689-4055.

Very truly yours,

James Nolan

James L. Nolan
Director - Compliance

mj
Enclosure

cc: D. S. Kircher
J. M. Willenberg
F. L. Austin
E. M. Gilpin
M. McAfee
R. G. Busterna

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Puget Sound Air Pollution Control Agency

Registration No. 11339

Notice of Construction No. 5730

Date DEC 29 1994

HEREBY ISSUES AN ORDER OF APPROVAL TO CONSTRUCT, INSTALL, OR ESTABLISH

This Order of Approval No. 5730 supersedes Order of Approval No. 3382 and adds the installation of a 120 ton/hour Clinker Pre-Grind Crusher with a Baghouse at 20,000 cfm, and a Finish Mill High Efficiency Separator Project including two (2) 60 ton/hour High Efficiency Separators with two (2) Baghouses at 77,000 cfm each, two (2) Baghouses at 10,000 cfm each, and one Baghouse at 5,000 cfm.

APPLICANT

GERALD J BROWN
ASH GROVE CEMENT COMPANY (E MARG,)
3801 E MARGINAL WY S
SEATTLE WA 98134-1113

OWNER

ASH GROVE CEMENT COMPANY (E MARG,)
3801 E MARGINAL WY S
SEATTLE WA 98134-1113

INSTALLATION ADDRESS

ASH GROVE CEMENT COMPANY (E MARG,), 3801 E MARGINAL WY S, SEATTLE, WA, 98134

THIS ORDER IS ISSUED SUBJECT TO THE FOLLOWING RESTRICTIONS AND CONDITIONS

1. Approval is hereby granted as provided in Article 6 of Regulation I of the Puget Sound Air Pollution Control Agency to the applicant to install or establish the equipment, device or process described hereon at the INSTALLATION ADDRESS in accordance with the plans and specifications on file in the Engineering Division of PSAPCA.
2. Compliance with this ORDER and its conditions does not relieve the owner or operator from the responsibility of compliance with Regulations I, II or III, RCW 70.94 or any other emission control requirements, nor from the resulting liabilities and/or legal remedies for failure to comply. Section 5.05(e) of Regulation I requires that the owner or operator must develop and implement an operation and maintenance (O&M) plan to assure continuous compliance with Regulations I, II, and III.
3. This approval does not relieve the applicant or owner of any requirement of any other governmental agency.
4. This source is subject to Subpart F of 40 CFR Part 60.
5. PM-10 emissions from each baghouse except the Main Stack baghouse shall not exceed 0.005 grains/dscf over a twenty-four hour period. Ash Grove may demonstrate compliance with this condition by any of the following:
   A. Performing a PSAPCA approved source test according to EPA Method 5 or EPA Method 201A.
   B. Demonstrating no visible emissions for 15 consecutive seconds.
   C. Demonstrating no visible emissions for three consecutive minutes, or
   D. Repairing within 24 hours, any baghouse that has visible emissions for more than three consecutive minutes.
   Compliance shall be determined for visible emissions using EPA Method 22. PSAPCA may require a source test for any baghouse that has sustained visible emissions, unless such emissions are unavoidable under WAC 173-400-107.
6. Except during startup and shutdown of the kiln, scheduled maintenance and for emissions considered unavoidable under WAC 173-400-107, emissions from the main baghouse shall not exceed the most stringent of PSD limits or the following limits:
   A. Carbon monoxide (CO): 1049 ppm @ 10% oxygen (O_2), 8-hr average, and 2353 tpy (tons per year);
   B. Nitrogen Oxides (NO_x): 700 ppm @ 10% O_2 1-hr average, 501 ppm @ 10% O_2, 24-hr average, and 1846 tpy.
   C. Sulfur Dioxide (SO_2): 180 ppm @ 10% O_2 1-hr average, and 176 tpy.
   D. Particulate Matter (PM): 10.6 pph and 46 tpy.
7. During startup and shutdown of the kiln, and during scheduled maintenance on the main baghouse, all of the emission limits stated in Condition 6 apply, except that emissions from the main stack shall not exceed 200 ppm of SO_2 corrected to 10% O_2 for a one-hour average and 1000 ppm of NO_x corrected to 10% O_2 for a one-hour average. Appendix A to this order defines the startup, shutdown and scheduled maintenance conditions under which these alternate limits apply.
8. Ash Grove shall monitor and report CO, NO_x, SO_2, and opacity from the main baghouse according to Article 12 of Regulation I.
9. By May 1, 1995, Ash Grove shall submit to PSAPCA for approval a best available control technology determination for controlling fugitive emissions from the clinker discharge end of the kiln. The evaluation must include start up and shut down.

(cont'd)

10. Ash Grove shall submit a testing plan to PSAPCA for approval within 60 days of startup for testing of the High Efficiency Separator Baghouse.
11. This Order of Approval supersedes and cancels Order of Approval No. 3382 dated June 19, 1990.

Fred L. Austin
FREDRICK L. AUSTIN P.E.
Reviewing Engineer
MEJ

J M Willenberg PE
JAY M. WILLENBERG
Reviewing Engineer

David D. Kircher
for DENNIS J. McLERRAN
Air Pollution Control Officer

KEY STEPS IN THE "TOP-DOWN" BACT PROCESS

STEP 1: ***IDENTIFY ALL CONTROL TECHNOLOGIES.***

- LIST is comprehensive (LAER included).

STEP 2: ***ELIMINATE TECHNICALLY INFEASIBLE OPTIONS.***

- A demonstration of technical infeasibility should be clearly documented and should show, based on physical, chemical, and engineering principles, that technical difficulties would preclude the successful use of the control option on the emissions unit under review.

STEP 3: ***RANK REMAINING CONTROL TECHNOLOGIES BY CONTROL EFFECTIVENESS.***

Should include:

- control effectiveness (percent pollutant removed);
- expected emission rate (tons per year);
- expected emission reduction (tons per year);
- energy impacts (BTU, kWh);
- environmental impacts (other media and the emissions of toxic and hazardous air emissions); and
- economic impacts (total cost effectiveness, incremental cost effeciveness).

STEP 4: ***EVALUATE MOST EFFECTIVE CONTROLS AND DOCUMENT RESULTS.***

- Case-by-case consideration of energy, environmental, and economic impacts.
- If top option is not selected as BACT, evaluate next most effective control option.

STEP 5: ***SELECT BACT***

- Most effective option not rejected is BACT.

III. A STEP BY STEP SUMMARY OF THE TOP-DOWN PROCESS

Table B-1 shows the five basic steps of the top-down procedure, including some of the key elements associated with each of the individual steps. A brief description of each step follows.

III.A. STEP 1--IDENTIFY ALL CONTROL TECHNOLOGIES.

The first step in a "top-down" analysis is to identify, for the emissions unit in question (the term "emissions unit" should be read to mean emissions unit, process or activity), all "available" control options. Available control options are those air pollution control technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation. Air pollution control technologies and techniques include the application of production process or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of the affected pollutant. This includes technologies employed outside of the United States. As discussed later, in some circumstances inherently lower-polluting processes are appropriate for consideration as available control alternatives. The control alternatives should include not only existing controls for the source category in question, but also (through technology transfer) controls applied to similar source categories and gas streams, and innovative control technologies. Technologies required under lowest achievable emission rate (LAER) determinations are available for BACT purposes and must also be included as control alternatives and usually represent the top alternative.

In the course of the BACT analysis, one or more of the options may be eliminated from consideration because they are demonstrated to be technically infeasible or have unacceptable energy, economic, or environmental impacts on a case-by-case (or site-specific) basis. However, at the outset, applicants

TABLE B-1. - KEY STEPS IN THE "TOP-DOWN" BACT PROCESS

STEP 1: *IDENTIFY ALL CONTROL TECHNOLOGIES.*

- LIST is comprehensive (LAER included).

STEP 2: *ELIMINATE TECHNICALLY INFEASIBLE OPTIONS.*

- A demonstration of technical infeasibility should be clearly documented and should show, based on physical, chemical, and engineering principles, that technical difficulties would preclude the successful use of the control option on the emissions unit under review.

STEP 3: *RANK REMAINING CONTROL TECHNOLOGIES BY CONTROL EFFECTIVENESS.*

Should include:

- control effectiveness (percent pollutant removed);
- expected emission rate (tons per year):
- expected emission reduction (tons per year);
- energy impacts (BTU, kWh);
- environmental impacts (other media and the emissions of toxic and hazardous air emissions); and
- economic impacts (total cost effectiveness, incremental cost effectiveness).

STEP 4: *EVALUATE MOST EFFECTIVE CONTROLS AND DOCUMENT RESULTS.*

- Case-by-case consideration of energy, environmental, and economic impacts.
- If top option is not selected as BACT, evaluate next most effective control option.

STEP 5: *SELECT BACT.*

- Most effective option not rejected is BACT.

should initially identify all control options with potential application to the emissions unit under review.

III.B. STEP 2--ELIMINATE TECHNICALLY INFEASIBLE OPTIONS.

In the second step, the technical feasibility of the control options identified in step one is evaluated with respect to the source-specific (or emissions unit-specific) factors. A demonstration of technical infeasibility should be clearly documented and should show, based on physical, chemical, and engineering principles, that technical difficulties would preclude the successful use of the control option on the emissions unit under review. Technically infeasible control options are then eliminated from further consideration in the BACT analysis.

For example, in cases where the level of control in a permit is not expected to be achieved in practice (e.g., a source has received a permit but the project was canceled, or every operating source at that permitted level has been physically unable to achieve compliance with the limit), and supporting documentation showing why such limits are not technically feasible is provided, the level of control (but not necessarily the technology) may be eliminated from further consideration. However, a permit requiring the application of a certain technology or emission limit to be achieved for such technology usually is sufficient justification to assume the technical feasibility of that technology or emission limit.

III.C. STEP 3--RANK REMAINING CONTROL TECHNOLOGIES BY CONTROL EFFECTIVENESS.

In step 3, all remaining control alternatives not eliminated in step 2 are ranked and then listed in order of over all control effectiveness for the pollutant under review, with the most effective control alternative at the top. A list should be prepared for each pollutant and for each emissions unit (or grouping of similar units) subject to a BACT analysis. The list should present the array of control technology alternatives and should include the following types of information:

- control efficiencies (percent pollutant removed);
- expected emission rate (tons per year, pounds per hour);
- expected emissions reduction (tons per year);
- economic impacts (cost effectiveness);
- environmental impacts [includes any significant or unusual other media impacts (e.g., water or solid waste), and, at a minimum, the impact of each control alternative on emissions of toxic or hazardous air contaminants];
- energy impacts.

However, an applicant proposing the top control alternative need not provide cost and other detailed information in regard to other control options. In such cases the applicant should document, to the satisfaction of the review agency and for the public record, that the control option chosen is, indeed, the top, and review for collateral environmental impacts.

III.D. STEP 4--EVALUATE MOST EFFECTIVE CONTROLS AND DOCUMENT RESULTS.

After the identification of available and technically feasible control technology options, the energy, environmental, and economic impacts are considered to arrive at the final level of control. At this point the analysis presents the associated impacts of the control option in the listing. For each option the applicant is responsible for presenting an objective evaluation of each impact. Both beneficial and adverse impacts should be discussed and, where possible, quantified. In general, the BACT analysis should focus on the direct impact of the control alternative.

If the applicant accepts the top alternative in the listing as BACT, the applicant proceeds to consider whether impacts of unregulated air pollutants or impacts in other media would justify selection of an alternative control option. If there are no outstanding issues regarding collateral environmental impacts, the analysis is ended and the results proposed as BACT. In the event that the top candidate is shown to be inappropriate, due to energy, environmental, or economic impacts, the rationale for this finding should be documented for the public record. Then the next most stringent alternative in the listing becomes the new control candidate and is similarly evaluated. This process continues until the technology under consideration cannot be eliminated by any source-specific environmental, energy, or economic impacts which demonstrate that alternative to be inappropriate as BACT.

III.E. STEP 5--SELECT BACT

The most effective control option not eliminated in step 4 is proposed as BACT for the pollutant and emission unit under review.

IV. TOP-DOWN ANALYSIS DETAILED PROCEDURE

IV.A. IDENTIFY ALTERNATIVE EMISSION CONTROL TECHNIQUES (STEP 1)

The objective in step 1 is to identify all control options with potential application to the source and pollutant under evaluation. Later, one or more of these options may be eliminated from consideration because they are determined to be technically infeasible or to have unacceptable energy, environmental or economic impacts.

Each new or modified emission unit (or logical grouping of new or modified emission units) subject to PSD is required to undergo BACT review. BACT decisions should be made on the information presented in the BACT analysis, including the degree to which effective control alternatives were identified and evaluated. Potentially applicable control alternatives can be categorized in three ways.

- *Inherently Lower-Emitting Processes/Practices*, including the use of materials and production processes and work practices that ***prevent*** emissions and result in lower "production-specific" emissions; and
- ***Add-on Controls***, such as scrubbers, fabric filters, thermal oxidizers and other devices that ***control*** and ***reduce*** emissions after they are produced.
- ***Combinations of Inherently Lower Emitting Processes and Add-on Controls***. For example, the application of combustion and post-combustion controls to reduce NOx emissions at a gas-fired turbine.

The top-down BACT analysis should consider potentially applicable control techniques from all three categories. Lower-polluting processes should be considered based on demonstrations made on the basis of manufacturing identical or similar products from identical or similar raw materials or fuels. Add-on controls, on the other hand, should be considered based on the physical and chemical characteristics of the pollutant-bearing emission stream. Thus, candidate add-on controls may have been applied to a broad